STINGER RMP

Army ACAT II Program		**Prime Contractor**
Total Number of Systems (FY01PB):	13,445 (RMP Block I)	Raytheon
Total Program Cost (TY$):	$350.615M	
Average Unit Cost (TY$):	$26,077	
Full-rate production:	3QFY94 (RMP Block I)	

SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020

The Stinger missile is the Army's system for short-range air defense. It provides the ground maneuver commander with force protection against low-altitude airborne targets, such as fixed-wing aircraft, helicopters, unmanned aerial vehicles, and cruise missiles. The Stinger is launched from a number of platforms: Bradley Linebacker, Avenger on High Mobility Multi-Purpose Wheeled Vehicle (HMMWV), and helicopters, as well as the Man-Portable Air Defense (MANPAD) configurations.

There were two upgrades planned for the Stinger-Reprogrammable MicroProcessor (RMP) missile to correct known operational deficiencies of the original Stinger-RMP missile system. The first upgrade, called Stinger-RMP Block I, made software and hardware changes, including a new roll frequency sensor, a small battery, and an improved computer processor and memory. It is currently in the Army and Marine Corps inventory. The second upgrade, Stinger-RMP Block II, was intended to improve both hardware and software, including an advanced imaging focal plane array and additional

signal processing software. The Stinger-RMP Block II missile was intended to provide improved performance against targets in clutter, more advanced stealthy cruise missiles, UAVs, and suppressed helicopter targets, and improved performance during nighttime operations.

The Stinger RMP Block II would contribute to ***Joint Vision 2020*** as a tactical ***precision engagement*** system that enhances the Army's ***dominant maneuver*** capabilities in the ground battle. Its strong capability against threat aircraft contributes to ***full dimensional protection***.

BACKGROUND INFORMATION

Operational deficiencies were discovered during testing of the Stinger-RMP missile in the late 1980s. The Secretary of Defense directed the Army to correct the deficiencies and then operationally test the fixes. In the 1990 TEMP, DOT&E approved a proposed operational test consisting of 24 missile firings.

The Stinger-RMP missile test program was suspended during Operation Desert Storm, and the missile was rushed into the field in preparation for war. After the Gulf War, the Army proposed a two-phase upgrade program: Stinger-RMP Block I and Stinger-RMP Block II. The Stinger-RMP Block I missile consisted of hardware and software modifications designed to solve some of the operational deficiencies observed during testing. The Stinger-RMP Block II consists of additional hardware and software modifications designed to resolve the remaining deficiencies. The major improvement in the Stinger-RMP Block II missile was the addition of a focal plane array IR seeker. Subsequently, the Army conducted tests on the Stinger Block I without an OSD-approved TEMP. This TEMP that would have supported these events was not approved by OSD because the planned testing had been considered to be not operationally realistic. Fifteen test firings were conducted between 1993 and 1996 to verify Stinger-RMP Block I hardware and software improvements. DOT&E's conclusions from the results of these tests include the following:

1. The firings did not resemble OT&E-like firings or soldier training exercises.
2. Most of the firings were off of a mount and not conducted with soldiers.
3. All firings were conducted after a countdown so that the engagement parameters (range, target behavior, clutter, missile tracking) were pre-determined.
4. The firings were predominantly in the lower half of the engagement envelope and the first long-range firing missed.
5. There were no firings against multiple targets and maneuvering targets.
6. There were few firings against low IR signature targets, such as UAVs.
7. There was only one firing at night.
8. The Block I test firing program did not contain the conditions under which the Stinger missile is expected to operate.

In 1999, the Army concentrated on preparing the Stinger-RMP Block II program for a Milestone II decision in 1QFY00; DOT&E worked with the Army on developing a test strategy. The activities accomplished included the approval of an updated Operational Requirement Document, an updated System Threat Assessment Report, and new Critical Operational Issues. The Test and Evaluation Master Plan (TEMP), approved by OSD in October 1999, describes the strategy for developmental testing,

combined operational and developmental testing, Live Fire Testing, Modeling and Simulation, and IOT&E that was planned to be conducted in 4QFY05.

The Army had proposed to field more than 13,000 Stinger-RMP Block I missiles. These missiles will remain in inventory until at least 2020. There were also plans to produce approximately 11,000 Stinger-RMP Block II missiles. The Army cancelled the Stinger-RMP Block II missile program in early FY00. Recent Foreign Military Sales added $32.4 million in RDT&E and $91.9 million in Procurement for 1627 retrofits.

As a separate but related issue, Congress has urged the Army to evaluate the Air-to-Air advantages and disadvantages that Stinger RMP Block I and the British Starstreak missiles provide for the Longbow Apache (AH-64D). This comparative analysis will include live Stinger and Starstreak shots off the Apache helicopter.

TEST AND EVALUATION ACTIVITY

The preparation of the Stinger RMP Block II TEMP, approved by OSD in October 1999, was the only T&E activity of significance to have occurred in FY00. The following top five concerns, from an operational evaluator's view, were addressed in the TEMP:

1. The lack of Tactics, Techniques, and Procedures for effectively operating the Stinger-RMP Block II missile system. This concern is predicated on modifications made to take advantage of improvements in the seeker's ability to detect, track, and engage targets beyond-visual range.
2. The probability of fratricide and out-of-range engagements, which increased because of the Block II missile seeker's extended acquisition range (beyond the missile's range of approximately 5000 meters).
3. The software algorithms for performance in a countermeasure environment.
4. The lack of threats defined for the system. Consequently, few tactics and doctrine have been developed for employing the missile on helicopters, although there is a requirement for the Stinger-RMP Block II missile to operate from helicopters.
5. Lack of plans calling for use of Modeling and Simulation for test and evaluation. Considerable work in model development remains to be done.

Subsequently, the Stinger RMP Block II was cancelled.

Planning for the Stinger/Starstreak tests continues. DOT&E intends to oversee the test and report the results.

TEST AND EVALUATION ASSESSMENT

DOT&E believes that the Stinger-RMP Block I missile was not adequately tested despite the fact that the missile is currently fielded to Army units. The Stinger-RMP Block I program did not have an OSD-approved test strategy because the proposed test program was not operationally realistic. Thus, hardware and software modifications made to the Block I missile to resolve known operational deficiencies were not adequately tested.

Consequently, because the Stinger-RMP Block II missile system was cancelled, significant operational shortfalls with this system may remain in the Army's ability to conduct short-range air defense. In particular, there will be a limited operational capability to defeat the growing threat of UAVs and cruise missiles. Furthermore, limitations will remain against helicopters and fixed-wing aircraft that have more sophisticated countermeasures or operate in clutter. Finally, there may be a diminished effectiveness of the forces equipped with Stinger missiles during nighttime operations.

CONCLUSIONS, RECOMMENDATIONS AND LESSONS LEARNED

The Army's short-range air defense units are fielded with Stinger missiles that have never been operationally tested. This leads to the following conclusions: (1) the operational effectiveness and suitability of those units cannot be assured; and (2) because the Stinger-RMP Block II missile was cancelled, possible deficiencies in the Army's efforts to defeat the evolving threat of UAVs, cruise missiles, and manned aircraft (with advanced countermeasures that operate in clutter) may remain. Since limited testing of the Stinger-RMP Block I was conducted at night, there may be deficiencies during nighttime operations. Additional night testing needs to be conducted.